IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Thomas Oswald, et al.
Serial No.	:	10/566,937
Filing Date	:	February 2, 2006
For	:	IMPROVED RESIN COMPOSITIONS FOR EXTRUSION COATING
Group Art Unit	:	1796
Confirmation No.	:	9887
Examiner	:	Krylova, Irina
Attorney Docket No.	:	62781A

CONSIDERED: /I.K./

DECLARATION OF THOMAS OSWALD

I, Thomas Oswald, hereby declare the following:

1. I received a PhD in Physical Inorganic Chemistry from Queen's University of Belfast, UK. For the past 25 years I have been employed by The Dow Chemical Company as a research chemist, including 15 years working specifically in the area of polyethylene R&D.

2. I am one of the named inventors for patent application 10/566,937, (the '937 application) and am familiar with its contents.

3. I sought to make a resin similar to the resin identified as Resin C in the '937 application, except without using a chilled ethylene feed. The resulting density was 0.92 g/cm^3 and the resulting melt index (I_2) was 0.40 g/10 min, substantially similar to Resin C in the '937 application (stated to be 0.47).

4. Figure 1, attached hereto, shows the GPC RI data from the two resins. As seen from that overlay, the resins are visually distinct, with the resin prepared with the chilled feed appearing to be more bi-modal than the unchilled feed example.

5. The MWD for each resin was also determined using GPC. The MWD of the unchilled resin was 9.19 as compared to 10.17 for the resin made using chilled feed.

6. The Mw(absolute)/Mw(GPC) was also determined for each of these resins. The ratio for the resin made with unchilled ethylene feed was 2.91 as compared to 3.72 for the resin made with chilled ethylene feed.

7. The resin made with the unchilled ethylene feed was blended with AFFINITY™ 1300 resin, a substantially linear ethylene ethylene-octene copolymer of the sort claimed by Kale. The linear low density polyethylene resin had an I_2 of 30 g/10 and a density of 0.905 g/cc. The

blends had varying amounts of the two resins, as indicated in Table 1 attached hereto. As seen in that table none of the blends achieved the CDF LS fraction of more that 0.07 at a conventional GPC molecular weight of 1,750,000 g/mol, as recited in claim 1.

8. These blends (up to 20 % LDPE) were then evaluated for coating performance. The observed neck-in for both resin made with chilled ethylene feed and unchilled ethylene feed are shown in Figure 2 (attached hereto). As seen in this figure, the blends made with the LDPE prepared with unchilled ethylene had significantly higher neck-in.

9. In order to further demonstrate the importance of using an LDPE with Mw(absolute)/Mw(GPC) ratio greater that 3.0, a commercial resin was evaluated. The commercial resin was Exxon-Mobil – 166BA (measured: 0.20 MI, 0.9211 g/cc, MWD = 7.85, Rheotens melt strength = 44.6 cN). This LDPE meets the melt index, melt strength and density requirements set forth in Kale, and is particularly remarkable for its very high melt strength. It is not known whether or not this resin was made with a chilled ethylene feed, however it has a low Mw(absolute)/Mw(GPC) ratio value of 2.31.

10. This Exxon-Mobil LDPE was blended with 80% by weight (i.e. 20% LDPE) of the same LLDPE used above (30MI, 0.905 g/cc). This blend was evaluated for coating performance. The result was that the blend with the Exxon-Mobil resin had a measured neck-in of 3 3/8 inches versus a measured neck-in of 2 ½ inches for blends using the LDPE made with the chilled ethylene feed.

11. The blend including the LDPE resin from Exxon-Mobil was also evaluated for the amount of CDF LS fraction at a conventional GPC molecular weight of 1,750,000 g/mol. The result was 0.023, well below the 0.07 required in claim 1.

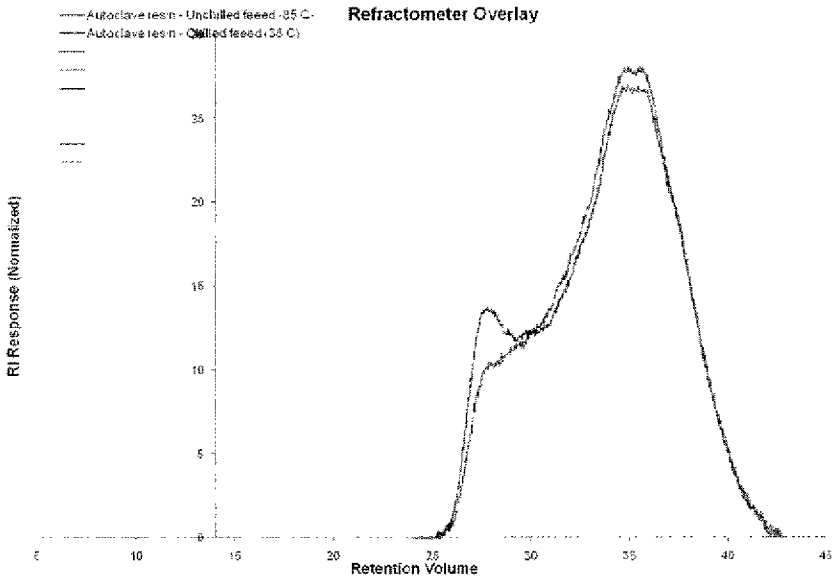

Figure 1:: GPC RI detector : Comparison of LDPE made in autoclave with unchilled ethylene feed (0.40 MI) and LDPE made in autoclave reactor with chilled ethylene feed (0.45 MI). Despite have a slightly lower MI, the LDPE made with chilled feed shows a larger high molecular weight peak.

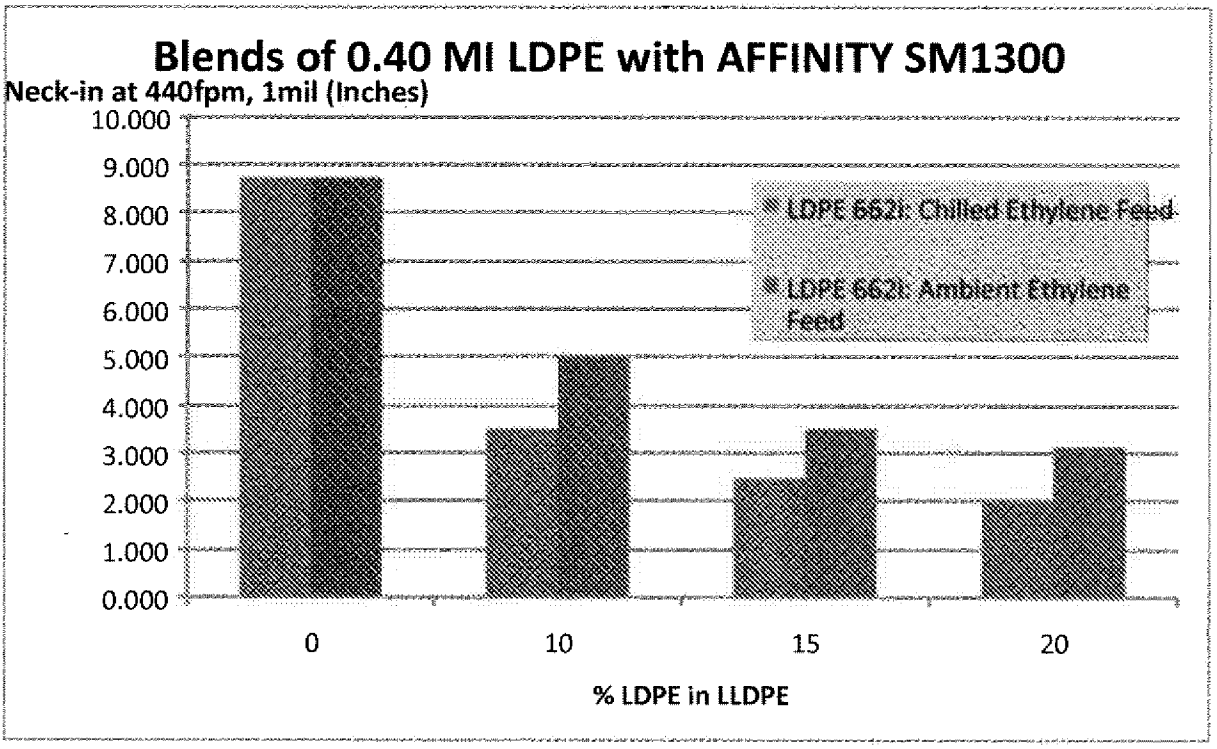

Figure 2:: Neck-in of blends of SM1300 with ≈0.4 MI LDPE 662i showing improved neck-in when chilled ethylene feed is used.

Table 1:: GPC CDF calculation for blends of 0.40 MI LDPE (autoclave, unchilled ethylene feed) – referred to as "662i Old"

Percent 662i Old	0
RI Fraction	0.133398241
LS Fraction	0.008553165
Percent 662i Old	5
RI Fraction	0.148192184
LS Fraction	0.010701759
Percent 662i Old	10
RI Fraction	0.162986126
LS Fraction	0.012850354
Percent 662i Old	15
RI Fraction	0.177780068
LS Fraction	0.014998948
Percent 662i Old	20
RI Fraction	0.192574011
LS Fraction	0.017147542
Percent 662i Old	25
RI Fraction	0.207367953
LS Fraction	0.019296136
Percent 662i Old	30
RI Fraction	0.222161896
LS Fraction	0.021444731
Percent 662i Old	50
RI Fraction	0.281337665
LS Fraction	0.030039108

Date: 22/Feb/2010

THOMAS OSWALD